Management of exotic common reed at Cape Cod National Seashore

Background

Within Cape Cod National Seashore (CACO), *Phragmites australis* (exotic common reed) occurs in a variety of ecosystems. These include interdunal wetlands, bogs, kettle ponds, and tidally restricted marshes. As a component of the National Park Service's mandate to protect ecosystems by controlling exotic, invasive vegetation wherever possible, CACO has developed a multifaceted approach that includes mechanistic, hydrologic, and chemical means of control. Without treatment, exotic vegetation can negatively impact native biodiversity and ecosystem function.

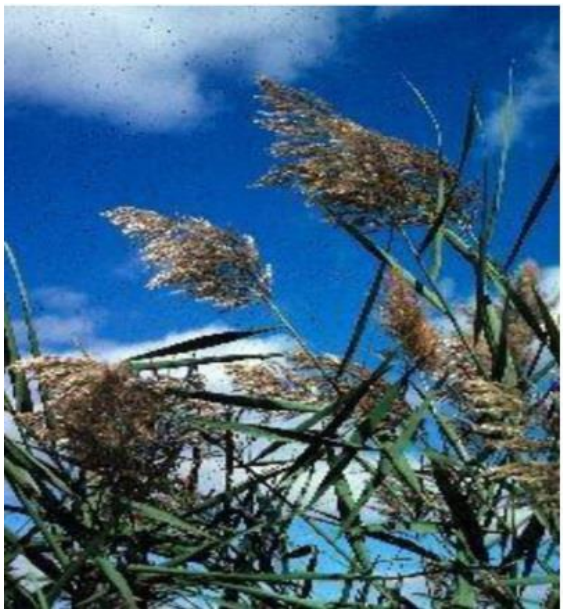

Figure 1 Phragmites australis (common reed).

Status & Trends

CACO has undertaken three main *Phragmites* control projects to date.

1. Drowning of *Phragmites* through manual removal of stems - At five freshwater kettle ponds *Phragmites* stems were repeatedly cut just a few inches below the pond bottom in an attempt to drown out the root systems. Thanks to the abnormally high water levels that year (2003), the effort proved quite successful with a ~90-100% reduction in live *Phragmites*.
2. Tidal restoration- In 1998, four large rectangular box culverts were built into a tidally restrictive dike at Hatches harbor (Provincetown) to alleviate the tidal restriction by facilitating seawater flow into the degraded marsh. Since that time, *Phragmites* has diminished substantially due to salt stress, allowing the expansion of native salt marsh plants over many acres of degraded salt marsh.
3. Chemical control - While other control methods (i.e., nonchemical) are always considered first in treating exotic vegetation, chemical control is sometimes the only feasible means of reducing the abundance of invasive species. At CACO, glyphosate (the active ingredient in the commercially-available Rodeo™) has been used to treat *Phragmites* in freshwater wetlands and kettle ponds. This herbicide is very effective and degrades rapidly into harmless compounds. In 2012, the Northeast Exotic Plant Management Team (a NPS unit based in the mid-Atlantic) treated a large stand of *Phragmites* in freshwater kettle pond (Herring Pond, Wellfleet). They applied glyphosate to the foliage using backpack sprayers. The results were excellent as total eradication of the treated areas was achieved within 1 year.

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More Information

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Phragmites stand in Ryder Pond before (2003) and after (2005) a manual removal treatment.

Long-Term Monitoring

Cape Cod's Ecosystem Monitoring program encompasses many different types of vegetation survey methods (protocols) that are designed to track the integrity of all the ecosystems within the Seashore. Detection and monitoring of invasive plant species is an integral component of these protocols. Through rigorous fieldwork and data analysis, the occurrence and spread of invasives such as *Phragmites* can be assessed. Similarly, follow up monitoring for *Phragmites* control projects is essential for evaluating the long term success of such efforts.

Management Applications

The information gained from these projects will help CACO assess which control method (or combination of methods) will be most effective for managing *Phragmites* in different situations. The knowledge and experience that CACO has in treating this species may also provide insight to other coastal Parks or protected lands where *Phragmites* is a concern.